

**Prolonged Grief Disorder in Bereaved Adults: The Role of Cause of Death and Time  
Since Loss**

By

Elvira Pepegova

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First Supervisor: Deniz Ergun

Second Supervisor: Justina Pociūnaitė-Ott

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University of Twente

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## Abstract

*Objective:* Prolonged Grief Disorder (PGD) is a proposed diagnostic category and is distinguished from normal grief by its intensity and the individual's difficulty to adapt over time. It is characterized by persistent distressing emotions and a fixation on the deceased, impacting their ability to function in everyday life. Possible risk factors for PGD are increasingly being investigated. For instance, the cause of death and time since loss might play a role in the development of PGD. The aim of this study is to investigate the impact of cause of death (natural vs non-natural) and how it influences grief responses in bereaved adults, and to examine the role that time since the loss plays in shaping these grief responses.

*Method:* Dutch-speaking adults ( $N = 56$ ) who experienced the loss of a loved one participated in this study. Participants completed the TGI-SR+, a validated 22-item grief scale, used to assess grief.

*Results:* A combination of regression analyses were performed to investigate the relationship between cause of death, time since loss and grief reactions in bereaved individuals.

Independent and multiple linear regression analyses showed that neither cause of death nor time since loss significantly predict grief responses, whether analyzed separately or together in the same model. However, gender was found to be a significant predictor, with females reporting higher grief responses than male participants.

*Discussion:* This study highlights the complexity and individualized nature of grief responses, emphasizing that grief is influenced by multiple factors rather than singular variables such as cause of death and time since loss. These findings emphasize the importance of considering demographic and contextual variables, such as gender, in grief research. Future studies should adopt longitudinal designs to capture the progression of grief over time to develop targeted interventions for those vulnerable to developing PGD.

## **Introduction**

### **Background Information**

The death of a loved one is a significant life experience that influences most individuals and occurs to nearly everyone at some point in their lifespan. The emotional and physical reactions to the death of a loved one, such as yearning and sadness, thoughts, memories and images of the deceased individual are referred to as grief reactions (Pop-Jordanova, 2021; Stroebe et al., 2007). In a study of university students, 29% reported having lost a family member or friend in the last 12 months. In contrast, in the elderly population, spousal bereavement is more common with approximately 45% of women and 15% of men above the age of 65 becoming widowed (Balk et al., 2010; Stroebe et al., 2007).

Grief is a personal experience, and the way individuals express and manifest their grief can vary from person to person. While most individuals manage to adapt to loss over time as grief progresses from acute to integrated grief, others might experience grief more intensely and for longer periods (De Stefano et al., 2020; Stroebe et al., 2001; Szuhany et al., 2021). ‘Normal’ grief could manifest as anguish, anger, and shock amongst other psychological reactions, however in most cases it evolves into integrated grief, usually within the first 12 months following a death, where the feelings of grief persist but become less overwhelming, enabling the individual to adjust (De Stefano et al., 2020; Shear, 2015). Integrated grief results normally occur around 6-12 months post-loss, however a minority of individuals will experience grief responses causing functional impairment and last far longer (Szuhany et al., 2021). In these cases, when grief becomes prolonged and debilitating, bereaved individuals may develop Prolonged Grief Disorder (PGD).

## **Defining PGD**

Prolonged Grief Disorder (PGD) is a proposed diagnostic category for bereaved individuals whose grief symptoms persist for a long period of time following a loss, often impacting their ability to function in everyday life. It is distinguished from normal grief by its intensity and the individual's difficulty to adapt over time (Lundorff et al., 2017). The prevalence of PGD differs depending on the population studied, however research estimates that approximately 9.8% of bereaved individuals meet the diagnostic criteria for PGD (Lundorff et al., 2017; Rosner et al., 2021). PGD was recently added as an independent mental disorder in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR; American Psychiatric Association, 2013). This addition includes specific criteria, to differentiate PGD from normal grief, such as a requirement for grief symptoms to persist. According to the International Classification of Diseases, 11<sup>th</sup> edition (ICD-11; World Health Organization, 2019), grief symptoms must persist for at least six months to be considered indicative of PGD (Eisma et al., 2020). In contrast, the DSM-5-TR diagnostic criteria require grief symptoms to persist for twelve months to ensure that natural grief reactions during the acute stage are not confused with PGD (Lundorff et al., 2017). Additionally, individuals must experience separation distress defined as persistent grief responses characterized by yearning or longing for the deceased and preoccupation with thoughts and memories of the deceased, nearly every day for at least a month (Boelen & Lenferink, 2021; Eisma, 2023).

Previous studies have suggested that there are some factors that potentially contribute to the risk of developing PGD. Understanding these factors is important for identifying individuals at risk and creating interventions. Research has identified specific variables that increase the likelihood of developing Prolonged Grief Disorder (PGD). For example, Buur et al. (2023) found 19 risk factors with four different categories ((1) bereavement and loss-

related, (2) inter-/non-personal, (3) intrapersonal, (4) appraisal and coping risk factors), to examine the chances of experiencing prolonged grief symptoms in the general bereaved population. The findings revealed risk factors contributing to the development of PGD are cause of death, social support, gender and attachment style (Buur et al., 2023). Other studies reinforce these findings, pointing to risk factors such as cause of death, kinship to the deceased, and coping strategies as predictors of experiencing prolonged grief symptoms (Djelantik et al., 2020; Harrison et al., 2021; Quadlander-Goff & Meyer, 2024; Smith & Ehlers, 2021).

### **The Role of Cause of Death and Time since Loss**

Among all risk factors, the cause of death, whether natural (e.g., illness or aging) or non-natural (e.g., homicide, suicide, or accident), has been extensively found as a significant factor influencing grief experiences. Although a minority of bereaved individuals develop Prolonged Grief Disorder (PGD), research shows that approximately 9.8% of adults following a natural death meet the diagnostic criteria for this disorder (Lenferink & O'Connor, 2023; Lundorff et al., 2017; Morentin et al., 2000). For instance, while prolonged grief was found in 10-20% of individuals following natural deaths (i.e., illness), it was observed in 49% of cases after non-natural deaths (i.e., accidents) (Aliyaki et al., 2024). One of the reasons cause of death could be a risk factor is the perceived unexpectedness of the loss. Deaths that are unexpected often limit the opportunity for bereaved individuals to prepare emotionally or to say goodbye, hindering the adaptation process (Doering et al., 2022). Non-natural deaths (i.e. homicide, suicide, or accident), are often sudden and unpredictable, which could in turn lead to more mental health difficulties, such as the disruption of positive assumptions about the world (e.g., the belief that the world is a safe place) and the presence of more intrusive and negative memories (Djelantik et al., 2020;

Doering et al., 2022). In contrast, natural deaths, such as those caused by illness or old age, allow the individual time to prepare for the loss.

Another important factor in understanding grief responses is the time since loss. Grief is a dynamic and individualized process that fluctuates over time in response to various internal processes and external circumstances. In the period following a loss, many bereaved individuals may experience acute grief, often characterized by strong yearning, longing, sadness, thoughts and images of the deceased (Shear, 2015). In most cases, these grief responses diminish with time passed as the bereaved individuals might adapt to life without the deceased, integrating the loss into their daily routines (Shear, 2015). However, some individuals continue to experience grief symptoms years or even decades after the loss, a pattern characteristic of PGD (Djelantik et al., 2020). Although some research has shown that shorter time since loss is associated with higher grief responses and longer time since loss with lower grief responses, other studies stipulate that time since loss may not fully explain grief responses on its own (Djelantik et al., 2020; Lundorff et al., 2020; Schwartz et al., 2018). This raises the need to examine time since loss alongside cause of death to better understand how each factor independently influences grief responses.

### **The Current Study**

Despite the growing research on cause of death and time since loss as important risk factors for grief responses, these variables have often been investigated in isolation or in terms of their interaction. This leaves a gap in exploration of how these variables may each contribute to grief responses when examined together in the same model. While previous literature has shown that non-natural deaths and shorter time since loss lead to more intense grief reactions, limited research has examined how these factors might independently contribute to grief trajectories when analyzed within the same model (Aliyaki et al., 2024;

Doering et al., 2022; Shear, 2015). It is important to examine these factors together to understand how each factor contributes to grief responses when both are accounted for in the same model. Analyzing cause of death and time since loss simultaneously allows for a better understanding of how each factor uniquely contributes to grief, beyond what is observed when they are examined independently. Addressing this gap in literature is important in developing a more nuanced understanding of grief as a complex and individualized process. This knowledge may inform future research and intervention strategies to better support individuals at risk for PGD.

To fill this gap, the aim of the current study is to investigate the impact of cause of death; specifically whether it was natural or non-natural, and how it influences grief responses in bereaved adults. Additionally, this study examines the role that time since the loss plays in shaping these grief responses. A research question was established: *to what extent do cause of death (natural vs. non-natural) and time since loss influence grief responses in bereaved adults?* To address this, the study examines two hypotheses: first, it is expected that the cause of death significantly predicts grief responses in bereaved adults, with non-natural causes of death leading to higher grief results, and second, that a longer time since the loss is associated with lower grief intensity.

## **Method**

### **Design and Procedure**

This study adopted a cross-sectional design and data was obtained from “rouwbehandeling.nl”, a Dutch public website that offers grief and bereavement care resources. This website allows individuals to self-monitor their grief responses by completing the Traumatic Grief Inventory – Self Report Plus (TGI-SR+), a validated 22-item tool for measuring grief symptoms (Lenferink et al., 2021). Prior to the completion of the TGI-SR+,

participants also answered a few questions that collected background and loss-related information.

## **Participants**

Individuals deemed eligible to participate in the study include Dutch speaking adults who have experienced a loss through a death of a loved one (i.e., spouse, family member or friend) prior to their participation in the study. Initially, 146 individuals took part in the study, however following screening and exclusion, only 56 remained on which the analyses were performed. The original dataset was cleaned by removing variables that were not relevant to the current study, such as kinship-related information, any variables related to children's grief and information on pet loss. Individuals were excluded if they had indicated that they are not interested in learning more about their grief (i.e., answered "no" to a question about their interest in their grief experience) and were under the age of 18 years old.

## **Measures**

### **Background Information on Loss-Related Characteristics**

Participants also completed a grief monitor where they were asked various questions that relate to the circumstances of loss that include details such as gender, age of the participant, kinship to the deceased, and the time elapsed since the loss (specified in months).

### **Assessment of PGD Symptoms**

Prolonged grief symptoms were examined using the TGI-SR+, which measures the intensity of grief-related symptoms experienced over the past month. Participants responded to the items on a 5-point Likert scale (1=*never* to 5=*always*). An example item is: "I had sudden thoughts and images arising that had to do with his/her death". The scoring of the TGI-SR+ involves summing the scores to all 22-items to determine an overall grief symptom



score. The internal consistency of the TGI-SR+ was examined using Cronbach's alpha, which indicated acceptable reliability ( $\alpha = 0.75$ ). The age of participants were calculated the difference of their birth date and the date of their completion of the TGI-SR+.

### **Assessment of Time since loss**

Participants provided information on the time since loss variable through indicating the number of days elapsed since the death of the deceased, prompted by the item, "What is the date of the death of your loved one?" (format: day-month-year). The time since loss variable was calculated by the difference between the date of the loss and the date of completion of the TGI-SR+ measured in months.

### **Assessment of Cause of Death**

Participants were also asked to identify the cause of death in the TGI-SR+, categorizing it as either natural (i.e. illness or aging) or non-natural (i.e. accidents, suicide, murder or manslaughter) and providing participants the option 'other' to identify any other causes of death. The item that prompted this information was as follows: "What was the cause of death of your loved one?" (1=*Physical illness or condition*, 3=*Accident*, 4=*Suicide*, 5=*Murder or manslaughter*, 6=*otherwise, namely*).

### **Data Analysis**

To test the hypotheses, data was analyzed using R version 4.2.2 (R Core Team, 2022). Descriptive statistics were calculated to evaluate participant demographics and loss-related characteristics. To ensure the solidity of the regression analysis, several assumptions were tested. The normality of the residuals were assessed using the Shapiro-Wilk test to evaluate whether the residuals of the regression model follow a normal distribution. Additionally, Lavene's test was conducted to check for homogeneity of variance across groups defined by

the independent variables. Finally, the potential for multicollinearity was examined by calculating tolerance and variance inflation factor (VIF) values for the independent variables.

For the main analysis, both independent and multiple linear regression analysis were carried out to assess the relationship between the independent variables (cause of death and time since loss) and the dependent variable (grief responses). In both types of regression analyses, cause of death was dummy coded as a binary variable (0=*natural*, 1=*non-natural*). This coding allowed for simple comparisons between the non-natural and natural deaths in relation to grief responses. Natural deaths were defined as those caused by physical illness or condition, while non-natural deaths included accidents, suicide, or murder or manslaughter. Time since loss (measured in months) was treated as a continuous variable. Grief responses were measured using the total score on the TGI-SR+, which was analyzed as a continuous variable. Higher scores indicate greater grief intensity. The multiple linear regression analysis assessed the simultaneous contributions of cause of death, time since loss, and control variables (Age and Gender) on grief responses. Two separate independent linear regression analyses were also carried out to individually investigate the relationship between each independent variable (cause of death and time since loss) and grief responses. These analyses provided insight into how each variable predicts grief responses when analyzed in isolation and in the same model.

## **Results**

### **Descriptive statistics**

#### ***Background and Loss-Related Characteristics***

A total of 56 participants were included within the study with ages ranging from 18 to 65 years ( $M = 43.98$ ,  $SD = 13.66$ ). Table 1 summarizes the background and loss-related characteristics of the sample. The majority of participants identified as woman (83.9%,  $n =$

47), with the remaining identifying as man (16.1%,  $n = 9$ ). With regards to the cause of death, 60.7% of participants reported natural causes, while 39.3% reported non-natural causes, including accident (10.7%), suicide (14.3%), homicide (1.8%), and other causes (12.5%). The time since loss variable ranged from 0 to 242 months, with a mean of 28.62 months ( $SD = 47.77$ ). Grief responses, as measured by the TGI-SR+ total score, ranged from 26 to 97, with a mean score of 63.18 ( $SD = 15.83$ ). Among the participants, 17 (30.36%) met the PGD criteria, defined as the TGI-SR+ score of  $\geq 71$ , indicating a notable proportion of participants experienced clinically significant levels of grief.

**Table 1**

*Background and Loss-Related Characteristics*

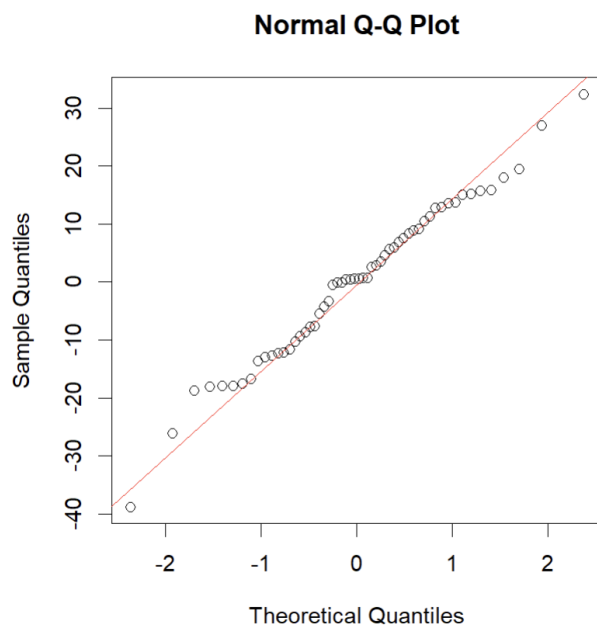
<b>Category</b>	<b>Subcategory</b>	<b>Percentage</b>	<b>Number of Participants (N)</b>
<b>Gender</b>	Female	83.9%	47
	Male	16.1%	9
<b>Cause of Death</b>	Natural	60.7%	34
	Accident	10.7%	6
	Suicide	14.3%	8
	Homicide	1.8%	1
	Other	12.5%	7
<b>Time since Loss</b>	Mean (SD)		28.62 (47.77)
	Range		0-242
<b>Grief Responses</b>	Mean (SD)		63.18 (15.83)
	Range		26-97

## Parametric Assumption Testing

The assumptions of multiple linear regression were tested before beginning with conducting the analyses. To test the normality of residuals the Shapiro-Wilk test was carried out. The test indicated that the residuals of the linear regression model were normally distributed ( $W = 0.98, p = 0.47$ ). A further Q-Q plot (Figure 1) confirmed that the residuals followed a normal distribution, as the points aligned closely to the diagonal line. Furthermore, a plot of residuals versus fitted was used to test the assumption of homoscedasticity of variance, and the values revealed no outstanding patterns, indicating that this assumption was met (Figure 2).

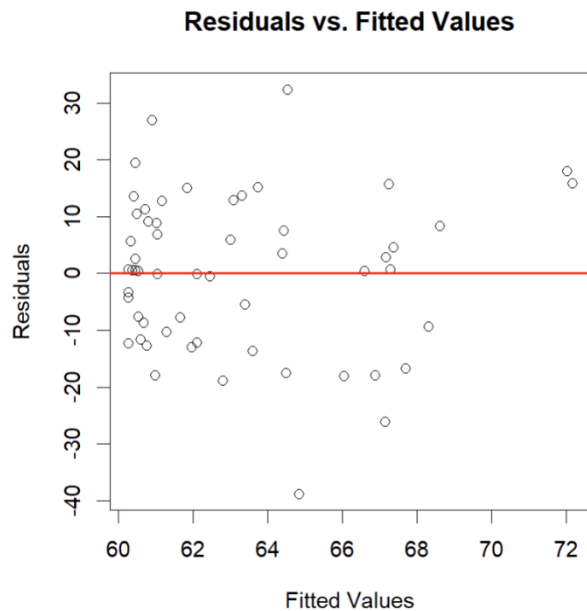
**Figure 1**

*Q-Q Plot for assessing Normality of Residuals.*



**Figure 2**

*Scatterplot of Residuals vs. Fitted Values for Homoscedasticity*



Finally, the variance inflation factor (VIF) values for all predictors were below 1.1 ( $CoD = 1.03$ ,  $TSL = 1.02$ ), indicated no significant multicollinearity among the independent variables. Therefore, the results indicate that the assumptions of multiple linear regression were satisfied.

### **Correlations between Study Variables**

A series of correlation analyses were performed to examine the relationships between cause of death (0 = *natural*, 1 = *non-natural*), time since loss, and grief responses. A Point-Biserial correlation was conducted to examine the relationship between cause of death and grief responses, and the results showed that there was no significant relationship ( $r = -0.03$ ,  $p = .63$ ). Similarly, a Pearson correlation was carried out to examine the relationship between time since loss and grief responses, and no significant correlation was found ( $r = -0.00$ ,  $p = .94$ ). Finally, a Point-Biserial correlation was performed to investigate the relationship between time since loss and cause of death, which also showed no significant correlation ( $r =$

-0.01,  $p = .94$ ). These findings show that both time since loss and cause of death do not have a strong linear association with grief responses when analyzed independently.

## Hypothesis Testing

### *Regression Analyses*

As the first regression model in this study, cause of death was included as the independent variable and grief responses were included as the dependent variable. The model explained 5.96% of the variance in grief responses ( $R^2 = 0.06$ ), as well as the overall model not being statistically significant ( $F(1, 54) = 3.42, p = .06$ ). The coefficient for cause of death (natural vs non-natural) ( $\beta = 0.24, p = .06$ ) indicated that non-natural deaths did not have a significant effect on grief responses. The results of this linear regression model suggest that cause of death alone is not a significant predictor of grief response in this sample.

**Table 2**

### *Linear Regression Analysis for Cause of Death Predicting Grief Responses*

Predictor	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>
Intercept	60.44	2.36		25.61	< .001
Cause of Death (CoD)	6.97	3.77	0.24	1.85	.06

*Note.* *B* = estimate, *SE* = standard error,  $\beta$  = standardized coefficients

A second linear regression analysis was carried out to investigate the relationship between time since loss and grief responses. The model explained only 1.66% of the variance in grief responses ( $R^2 = 0.02$ ), and the overall model was not statistically significant ( $F(1, 54) = 0.91, p = .35$ ). The coefficient for time since loss ( $\beta = 0.13, p = .35$ ) indicated no significant

relationship between time since loss and grief responses. These results suggest that time since loss does not significantly predict grief responses in this sample.

**Table 3**

*Linear Regression Analysis for Time Since Loss Predicting Grief Responses*

Predictor	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>
Intercept	62.11	2.19		28.38	< .001
Time Since Loss (TSL)	0.04	0.04	0.13	0.95	.35

*Note.* *B* = estimate, *SE* = standard error,  $\beta$  = standardized coefficients

A multiple regression model was conducted to investigate the relationship between cause of death, time since loss and grief responses. The model also controlled for variables age and gender. The model explained 22.0% of the variance in grief responses ( $R^2 = 0.22$ , *adjusted*  $R^2 = 0.16$ ) and was statistically significant,  $F(4, 51) = 3.69$ ,  $p = .01$ . Non-natural deaths were not significantly associated with grief responses ( $\beta = -0.03$ ,  $p = .72$ ).

Additionally, no meaningful relationship was observed between time since loss and grief reactions ( $\beta = 0.06$ ,  $p = .54$ ). The control variable age showed no statistically significant association with grief responses ( $\beta = -0.13$ ,  $p = .29$ ). The control gender was a significant predictor, with female participants reporting higher responses compared to male participants ( $\beta = 0.44$ ,  $p = < .001$ ).

**Table 4**

*Multiple Linear Regression Analysis for Grief Responses*

Predictor	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i>
Intercept	40.32	11.31		3.57	< .001

Cause of Death (CoD)	-0.30	0.82	-0.03	-0.37	.72
Time Since Loss (TSL)	0.02	0.08	0.06	0.62	.54
Age	-0.17	-0.13	-0.13	-1.07	.29
Gender	16.61	0.44	0.44	3.51	.001

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*Note.*  $B$  = estimate,  $SE$  = standard error,  $\beta$  = standardized coefficients

### Discussion

This study aimed to investigate the influence of cause of death (natural vs. non-natural) and time since loss on grief responses amongst bereaved individuals. It was hypothesized that cause of death would be associated with grief responses, with non-natural causes of death leading to more intense grief, and that longer time since the loss would be associated with lower grief responses. The results of the analyses mostly did not confirm the study hypotheses, though several insights came to light.

To address the first research question, the relationship between cause of death and grief responses was explored using an individual linear regression model and multiple regression model. Neither model found cause of death to be a significant predictor of grief responses, suggesting that cause of death may not independently influence grief responses. This contradicts the original hypothesis that individuals bereaved by non-natural deaths would present higher grief responses compared to those bereaved by natural deaths (Aliyaki et al., 2024). One explanation for this could be the binary classification of cause of death variable. Categorizing diverse causes of death (i.e., accidents, suicides, homicides) into one single “non-natural” category may be oversimplifying the complex ways in which individuals



process different types of loss. While these types of loss differ in their relational and emotional contexts, the shared experience of unexpectedness and suddenness may trigger similar grieving processes (Djelantik et al., 2020; Doering et al., 2022). This simplification in turn might make it difficult to identify significant differences when examining cause of death across differing categories.

Additionally, Djelantik et al. (2020) proposed that grief responses are influenced by the interaction of multiple factors rather than by cause of death alone. In the current study, unmeasured variables, such as kinship to the deceased, availability of social support or coping mechanisms, may have influenced grief responses of the participants and potentially overshadowed the influence of cause of death. Previous literature has suggested that close relationships with the deceased, strong social support and coping mechanisms can strongly influence the grieving process (Djelantik et al., 2020; Harrison et al., 2021; Quadlander-Goff & Meyer, 2024; Smith & Ehlers, 2021). These factors that were not included in the analysis might have interacted with cause of death in complex ways, potentially influencing how participants experience and process their grief. For instance, the loss of a close family member may result in stronger grief reactions than the loss of a distant relative, irrespective of the cause of death.

Another possible explanation for the non-significant findings between cause of death and grief responses is the small sample size and uneven distribution of participants across the different cause of death categories. While non-natural deaths were grouped together during the analysis, the subgroups (i.e., accidents, homicides, suicides) were indicated by very few participants, which restricts the ability to detect significant differences in those groups. This uneven distribution might have influenced the statistical power of the analysis that was needed to observe distinct patterns of grief responses in the different causes of death. Consequently, if meaningful differences exist, they may have been hidden by the inadequate

representation of the subgroups of non-natural death. Therefore, a larger and balanced sample across the different causes of death may yield more detailed results and relationships between cause of death and grief responses.

The second research question was focused on the relationship between time since loss and grief responses. Contrary to the original hypothesis that longer time since loss would lead to lower grief responses, the findings of this study did not support this assumption, highlighting the need to consider other influencing factors. Neither the individual regression analysis nor the multiple regression analyses yielded a significant relationship between time since loss and grief responses. This result is in contrast to previous literature, stating that grief normally diminishes with time passed (De Stefano et al., 2020; Shear, 2015). One possible explanation for this lack of significant association could be the non-linear and strongly individualized nature of grief progression. Previous literature has highlighted that the progression of grief does not always follow a linear and predictable trajectory (Djelantik et al., 2020; Shear, 2015). External factors such as anniversaries, reminders or life transitions may be emotional triggers potentially causing fluctuations in grief reactions and intensity, irrespective of how much time has passed since the death. This variability in individual grief trajectories may be contributing to the absence of a clear trend and significance between time since loss and grief responses in the current data.

Another factor that might be contributing could be the variability in time since loss among participants in the sample. The wide variation in time since loss (i.e., from months to decades) and may have introduced noise into the data, obscuring potential patterns and limiting the ability to observe a significant association. Moreover, the uneven distribution of participants across the different causes of death may have added more variability, in turn reducing the statistical power needed to detect meaningful relationships. This highlights how time since loss may not be able to explain differences in grief intensity independently.

Another explanation for the lack of significance in this relationship may be due to how time since loss is measured. Even though time since loss is a continuous variable in this study, it does not take into account the subjective perception of an individual's grieving process. For instance, an individual that lost a loved one many years ago but recently had a triggering event may still report high grief responses, making the objective measurement of time since loss unable to fully explain grief intensity. This underscored how time since loss independently may not sufficiently explain differences in grief intensity.

Additionally, coping mechanisms may further explain the absence of a significant relationship between time since loss and grief responses further (Djelantik et al., 2020; Harrison et al., 2021; Quadlander-Goff & Meyer, 2024; Smith & Ehlers, 2021). For instance, individuals employing avoidant coping mechanisms may continue to experience higher grief responses, regardless of how much time has passed. Contrarily, those that employ active coping mechanisms may process their grief more successfully, resulting in differing grief trajectories (Smith & Ehlers, 2021). In the current study, the complex effects of coping mechanisms were not investigated thus may have concealed any direct, linear association between time since loss and grief responses.

Furthermore, the significant role of gender found in this study further emphasizes the individualized nature of grief responses. Some studies suggest that women may experience an increase in grief symptoms over time compared to men who show acute, decreasing grief symptoms, potentially due to differences in emotional processing (Buur et al., 2023; Lundorff et al., 2020). This interaction between gender and time since loss may have been overlooked in the current study, which might explain why gender emerged as a significant predictor in the multiple regression analysis. However, it is also important to note that the sample of this study was predominantly made up of female participants, which could have skewed the results, hence the significant relationship between gender and grief responses.

## **Strengths of the Study**

This study has several notable strengths that contribute to its relevance in research on grief responses and PGD. First, this study utilized the TGI-SR+ which is a validated and recognized tool for assessing grief responses and can provide reliability and accuracy when evaluating grief intensity. Second, this study explored whether cause of death and time since loss independently predict grief responses and how their effects change when analyzed together in the same model, while accounting for the role of other factors. By employing both independent linear regression and multiple linear regression analyses, the study provided a more comprehensive understanding of the individual and adjusted effects of these variables on grief responses. Additionally, the sample's diversity in time since loss and cause of death allowed for exploration of grief responses across different individual trajectories. Finally, this research provides a cross-sectional snapshot of grief experiences, offering valuable insights into how cause of death and time since loss are associated with grief responses at a single point in time, showcasing initial patterns and relationships between cause of death, time since loss and grief responses, which highlights areas for future investigation.

## **Limitations of the study**

Despite its strengths, this study also has several notable limitations that must be acknowledged. First, while the cross-sectional approach provided important insights into grief responses, it is not ideal for capturing progression of grief over time. Grief is an ongoing process, and a longitudinal approach would be better in examining how risk factors like cause of death and time since loss influence grief trajectories (Sveen et al., 2018). A second limitation that presents a significant challenge is the small sample size. With only 56 participants, the sample lacked statistical power, increasing the risk of Type II errors and reducing representativeness. Additionally, the sample included only Dutch-speaking adults,

which limits the cultural and contextual generalizability of the findings to broader populations of bereaved individuals. Third, the study's recruitment strategy may have introduced some sampling bias, by including only participants interested in learning about their grief, potentially excluding individuals with more severe or avoidant grief responses. Fourth, the study's self-reliance on self-reported data introduced potential recall bias, particularly participants reporting losses that happened years ago. Social desirability bias may have also influenced responses, as participants might have underreported or exaggerated their grief experiences. Finally, the study did not account for other important risk factors, such as kinship to the deceased or social support, which are known to shape grief experiences and may have interacted with cause of death and time since loss to influence grief experiences (Djelantik et al., 2020; Smith & Ehlers, 2021).

### **Future directions**

In light of the abovementioned strengths and limitations of this study future studies can benefit from longitudinal designs to better understand the temporal relationships of grief experiences and how the cause of death and time since loss interact over time. As mentioned, a cross-sectional design cannot capture the changes that occur during the grieving process, particularly for individuals whose grief processes differently, for instance in the cases of probable PGD (Titlestad & Dyregrov, 2022). Through the use of longitudinal studies, future research could provide more detailed insights into how grief evolves and transitions and thus be able to identify intervention points (Sveen et al., 2018). Second, the role of other risk factors such as coping strategies, cultural or religious beliefs, and social support should be further investigated. This is because these variables may act as mediators or moderators in the relationship between cause of death, time since loss and grief experiences of participants. In turn, this can provide a more in-depth understanding of individual differences in the grief

experience (Djelantik et al., 2020; Harrison et al., 2021; Quadlander-Goff & Meyer, 2024; Smith & Ehlers, 2021).

Another idea for future research is examining psychological and behavioral outcomes of grief. This could be done through incorporation of measures for functional impairment (i.e., disruptions in work, social relationships or daily life) in combination with grief intensity, in order to provide a more detailed framework of how grief affects bereaved individuals (Nielsen et al., 2020). Future studies should examine how time since loss interacts with other variables, and whether it acts as a moderator or mediator in grief outcomes. Moreover, future studies should focus on gathering samples that are diverse in nature. Expanding the sample to include individuals from various cultural, socioeconomic, and geographic backgrounds would provide a more nuanced understanding of grief experiences, potentially uncovering cultural or contextual influences on grief experiences and PGD.

### **Conclusion**

To conclude, this study underscored the complexity of grief responses following the loss of a loved one. While the study found that cause of death and time since loss were not significant predictors of grief responses, gender emerged as a significant predictor, with females reporting higher grief responses compared to men. These findings suggest that grief responses may be shaped by individual differences, highlighting the importance for personalized approaches to support bereaved individuals. In addition, the results highlight the importance of exploring how various risk factors, such as coping mechanisms or kinship to the deceased, interact and influence grief responses. Hence, future research should continue exploring how different risk factors influence grief experiences, in hopes of establishing targeted and effective interventions for bereaved individuals.

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